

SOLID-STATE LIGHTING:**GATEWAY****Demonstrations:
Exploring SSL
Product Performance
in the Real World**

Demonstrations offer potential solid-state lighting (SSL) buyers detailed product evaluation and access to critical hands-on technology experience before they make large-scale purchases.

The U.S. Department of Energy's GATEWAY SSL Technology Demonstration program features high-performance LED lighting products in general illumination applications. Results are reported objectively and in detail, based on real-world experience, and provide data on product performance and cost effectiveness. Quantitative performance measures include energy use, light output/distribution, color quality, and installation/interface/control issues. Qualitative performance is investigated by soliciting input from relevant user communities.

Each project centers on a particular host site involving one or more lighting applications and employs a demonstration team that may include energy efficiency organizations, local utilities, and one or more manufacturers in

addition to the host. A project may be initiated by any of these parties and is typically pursued by one that is already investigating LED lighting independently.

- **Host sites** provide locations for demonstrations, assistance with installation and evaluation/measure-ment, and a willingness to participate in activities related to the demonstra-tions, such as site visits, photography, and publicity.
- **Manufacturers** provide products for demonstrations and may assist in site selection and other aspects of planning and installation.
- **Energy efficiency organizations and utilities** provide contacts with potential host site organizations and assist with

related outreach and promotional activities.

- **DOE** provides technical support for analyzing site needs, comparing potential products for demonstration prior to selection, conducting onsite measurements, and performing post-measurement evaluation of the data—and also writes and publishes detailed reports. DOE does not contribute funding toward the purchase or installation of the products evaluated in GATEWAY demonstrations.

Every aspect of acquiring the demonstra-tion samples—such as whether they'll be purchased at a discounted price—are negotiable among the participants. All results are reported in terms of what a typical user might expect to achieve, which is why, for example, current retail



GATEWAY demonstrations, such as this one at The Smithsonian American Art Museum in Washington, equip potential buyers with real-world data to support informed decisions about SSL. *Photo courtesy of Smithsonian American Art Museum.*



LED luminaires installed outside a newly constructed Walmart Superstore in Leavenworth, Kansas, achieved significant energy savings when compared to a theoretical baseline. The installation was based on the LED Parking Lot Performance Specification developed by the DOE Commercial Building Energy Alliances.

Photo courtesy of Walmart.

GATEWAY Demonstrations Procedure

APPLICATION
SCREENINGTEAM FORMATION
LABORATORY
TESTING

INSTALLATION

EVALUATION

REPORTING

PROMOTION OF
RESULTS
POTENTIAL FOR
LARGE-SCALE
PURCHASES

- **Application Screening:** Once products and sites are screened to ensure a suitable match, a “go/no-go” decision is made regarding the project based on preliminary energy and economic evaluations.
- **Team Formation:** Host sites and other team members are identified to carry out the demonstration. All roles and responsibilities are detailed in a consensus “teaming agreement.”
- **Laboratory Testing:** Concurrent with team formation, testing of sample products is conducted to establish or verify important measures of performance.
- **Installation:** Products are installed with appropriate pre- and post-measurements; additional demonstration steps are carried out, including any publicity and education events.
- **Evaluation:** Results are evaluated based on actual measured values, including energy and cost savings and related economic analyses, as well as qualitative occupant and user responses to the installation.
- **Reporting:** Results of successful demonstrations are widely publicized; results from long-term testing are released as they become available. While no sales of demonstrated products are assured, DOE expects large-scale product purchases or promotions by demonstration team members will also occur for products that have performed to buyers’ satisfaction.

prices are used instead of any discount that was offered by a manufacturer for the purposes of the demonstration.

GATEWAY attempts to identify and pursue projects meeting the general criteria of saving energy, matching or improving illumination, and offering cost-effectiveness relative to the standard competing light source. However, meeting all three criteria can present a formidable challenge, so a project may still be pursued for other reasons, such as the educational value offered. Ultimately, each project is judged on its own merits by all members of the team, and a “go/no-go” decision is made following an early assessment of the situation.

Sharing Results

Above all, GATEWAY has an educational focus. The results from GATEWAY demonstrations enable users of all types to evaluate and refine their lighting requirements before making large-scale purchasing decisions. Results are shared through the DOE SSL website, workshops, webcasts, articles in trade publications, and other related activities. Team members are often invited to participate in subsequent

DOE conferences and workshops to convey lessons learned, benefits obtained, and other aspects of the project. Final reports on GATEWAY demonstration projects are available for download at ssl.energy.gov/gateway-demos_results.html.

How to Participate

Any potential team member can propose a project for consideration by GATEWAY. For example, a manufacturer may identify an organization that is interested in an independent product evaluation and could serve as a host site, or a utility may be interested in comparing a number of products across a given application. GATEWAY program information is available at ssl.energy.gov/gatewaydemos.html. GATEWAY cannot pursue all inquiries, but when submissions are selected, the evaluation follows the general procedure outlined above.

GATEWAY demonstrations are also conducted in support of the Municipal Solid-State Street Lighting Consortium, established by DOE to leverage the efforts of cities evaluating LED street lighting. The Consortium collects,

analyzes, and shares technical information and experiences related to LED street lighting demonstrations, enabling participants to tap into a vast body of field data and knowledge. Learn more about the Consortium at ssl.energy.gov/consortium.html.



LEDs (middle two fixtures) replace high-pressure sodium lighting in this parking garage at the Providence Portland Medical Center. Photo courtesy of Pacific Northwest National Laboratory.

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For More Information

For more information on the GATEWAY program, see ssl.energy.gov/gatewaydemos.html.

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